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Exercise - I (Conceptual Questions) Build Up Your Understanding

Attacking Reagent

1. Which of the following species is an electrophile

(1) RNH_2 (2) SO_3 (3) $NO_3^{\ominus}$ (4) ROH

2. Which of the following acts as a nucleophile?

(1) $\overset{\oplus}{N}O_2$ (2) $:CCl_2$ (3) $\overset{\ominus}{N}H_2$ (4) $\overset{\oplus}{C}H_3$

Reaction Intermediates

3. Which of the following contains three pair of electrons :

(1) Carbanion
(2) Carbocation
(3) Carbon free radical
(4) None

4. Carbanion is a :-

(1) Base (2) Nucleophile
(3) Both the above (4) None

I-Effect

5. $\overset{\ominus}{C}H_3$ is less stable than :-

(1) $CH_3-\overset{\ominus}{C}H_2$ (2) $CH_3-\overset{\ominus}{C}H-CH_3$

(3) $\overset{\ominus}{C}H_2-NO_2$ (4) $CH_3-\overset{\ominus}{C}H-C_2H_5$

6. Decreasing order of –I effect of the triad $[-NO_2, -\overset{\oplus}{N}H_3, -CN]$ is :-

(1) $-\overset{\oplus}{N}H_3 > -NO_2 > -CN$

(2) $-\overset{\oplus}{N}H_3 > -CN > NO_2$

(3) $-CN > -NO_2 > -\overset{\oplus}{N}H_3$

(4) $-NO_2 > -CN > -\overset{\oplus}{N}H_3$

7. $CH_3-\overset{\oplus}{C}H-CH_3$ is less stable than

(1) $CH_3-\overset{\oplus}{\underset{CH_3}{\overset{|}{C}}}-CH_3$ (2) $CH_3-\overset{\oplus}{C}H_2$

(3) $\overset{\oplus}{C}H_3$ (4) None of these

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8. The correct order of stability of given carbanions will be :-

$CH_3-\overset{\ominus}{C}H_2$ (I) $\quad CH_2=\overset{\ominus}{C}H$ (II) $\quad HC\equiv\overset{\ominus}{C}$ (III)

(1) I > II > III (2) III > II > I
(3) I > III > II (4) II > I > III

9. Which is most basic among the following :-

(1) CH_3NH_2 (2) $CH_3CH_2NH_2$
(3) NH_3 (4) $(CH_3)_2CHNH_2$

10. Which of the following has maximum pK_a :-

(1) CH_2FCOOH (2) $CH_2ClCOOH$
(3) CH_3COOH (4) HCOOH

11. Which of the following show + I-effect :-

(1) –OH (2) $-OCH_3$ (3) $-CH_3$ (4) –Cl

12. The strongest acid amongst the following compounds is ?

(1) $CH_3CH_2CH(Cl)CO_2H$
(2) $ClCH_2CH_2CH_2COOH$
(3) CH_3COOH
(4) HCOOH

13. Which of the following acids is stronger than acetic acid :-

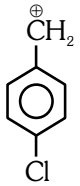
(1) Propanoic acid (2) HCOOH
(3) Butyric acid (4) $(CH_3)_2CHCOOH$

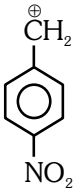
14. Which of the following acids have the lowest pK_a value :-

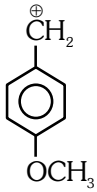
(1) $CH_3-\underset{Cl}{\underset{|}{CH}}-COOH$ (2) $Cl-CH_2-CH_2-COOH$
(3) CCl_3COOH (4) $CHCl_2COOH$

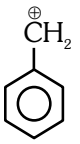
R- or M-Effect

15. Most stable carbocation is :-

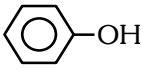
(1) 

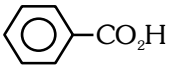
(2) 

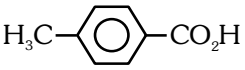
(3) 

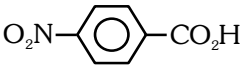
(4) 

16. Most acidic compound is :-

(1) 

(2) 

(3) 

(4) 

17. Which resonating structure of vinyl chloride is least stable :-

(1) $CH_2=CH-\ddot{\underset{\cdot\cdot}{Cl}}:$

(2) $\overset{\ominus}{C}H_2-CH=\overset{\oplus}{Cl}$

(3) $\overset{\ominus}{C}H_2-\overset{\oplus}{C}H-Cl$

(4) All have equal stability

18. The stabilization due to resonance is maximum in

(1)

(2)

(3)

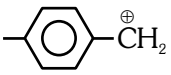
(4)

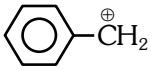
19. In which of the following compounds carbon–chlorine bond distance is minimum :-

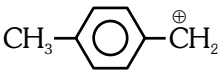
(1) $CH_3—Cl$ (2) $C_6H_5—CH_2—Cl$

(3) $CH_2=CH—Cl$ (4) $CH_2=CH—CH_2—Cl$

20. Consider the following carbocations

(a) 

(b) 

(c) 

(d) $CH_3-\overset{\oplus}{C}H_2$

The relative stabilities of these carbocations are such that :-

(1) d < b < c < a (2) b < d < c < a

(3) d < b < a < c (4) b < d < a < c

21. Among the following, the strongest base is :-

(1) $C_6H_5NH_2$ (2) p–NO_2–$C_6H_4NH_2$

(3) m–NO_2–$C_6H_4NH_2$ (4) $C_6H_5CH_2NH_2$

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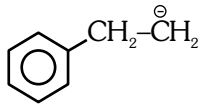
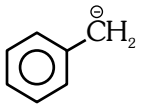
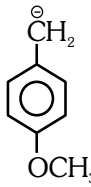
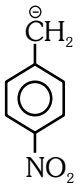
22. The most stable carbanion among the following is

(1) 

(2) 

(3) 

(4) 

23. The oxygen atom in phenol –

(1) Exhibits only inductive effect

(2) Exhibits only resonance effect

(3) Has more dominating resonance effect than inductive effect

(4) Has more dominating inductive effect than resonance effect

24. Mesomeric effect is due to :-

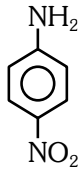
(1) Delocalization of σ $e\bar{s}$

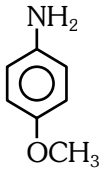
(2) Delocalization of π $e\bar{s}$

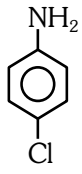
(3) Migration of H – atom

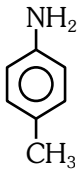
(4) Migration of proton

25. Which of the following is least basic :–

(1) 

(2) 

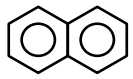
(3) 

(4) 

26. Among the following the aromatic is

(1)

(2)

(3) 

(4)

27. Which is aromatic among the following

(1)

(2)

(3)

(4) All the above

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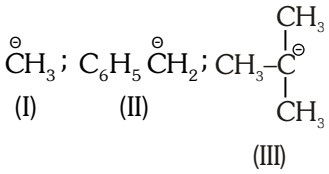
28. Select the correct option for stability of following carbanions :



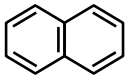
(I) (II) (III)

(1) I > II > III (2) II > I > III

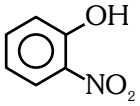
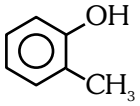
(3) III > II > I (4) II > III > I

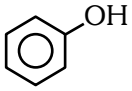
29. The non aromatic compound among the following is :-

(1) (2)

(3)  (4)

30. Which one of the following compounds is most acidic :-

(1)  (2) 

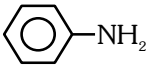
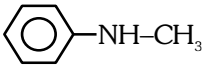
(3)  (4) $ClCH_2CH_2OH$

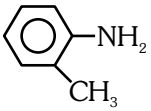
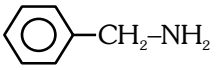
31. Which of the following is most acidic :-

(1) phenol (2) benzyl alcohol

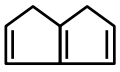
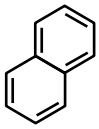
(3) m-chloro phenol (4) cyclohexanol

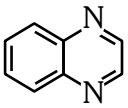
32. Which of the following is the strongest base :-

(1)  (2) 

(3)  (4) 

33. Which is Aromatic compound :-

(1)  (2) 

(3)  (4) 2 and 3 both

34. Which of the following is the most acidic compound :-

(1) $CH_2 = CH_2$ (2) $HC \equiv CH$

(3) (4)

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35. Among the following the strongest acid is :-

(1) CH_3COOH

(2) C_6H_5COOH

(3) m–$CH_3OC_6H_4COOH$

(4) p–$CH_3OC_6H_4COOH$

36. Which one of the following resonating structures of 1–methoxy–1,3–butadiene is least stable :–

(1) $\overset{\ominus}{C}H_2$–CH=CH–CH=$\overset{\oplus}{O}$–CH_3

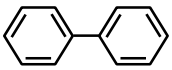
(2) CH_2=CH–$\overset{\ominus}{C}$H–CH=$\overset{\oplus}{O}$–CH_3

(3) $\overset{\ominus}{C}H_2$–$\overset{\oplus}{C}$H–CH=CH–O–CH_3

(4) CH_2=CH–CH=CH–O–CH_3

37. Four structures are given in options (a) to (d). Examine them and select the aromatic strucutures.

(a) (b)

(c)  (d)

(1) a and d (2) b and c

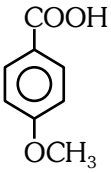
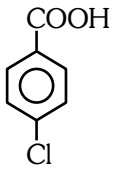
(3) a and b (4) a and c

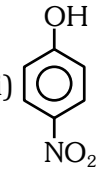
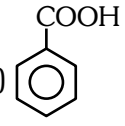
38. Phenol is less acidic than

(1) Ethanol (2) o-Nitrophenol

(3) o-Methylphenol (4) o-Methoxyphenol

39. Arrange the following acid in decreasing order of their acidic strength.

(i)  (ii) 

(iii)  (iv) 

(1) iii > ii > iv > i (2) ii > iv > i > iii

(3) i > iii > ii > iv (4) iv > ii > iii > i

Hyperconjugation

40. Which of the following compounds exhibits hyperconjugation :

(1) Phenol (2) Ethyne

(3) Ethanol (4) Propene

41. Which of the following is least stable :–

(1) $CH_3-\overset{\oplus}{C}H-CH_3$ (2) $CH_3-CH_2-\overset{\oplus}{C}H_2$

(3) $CH_3-\underset{CH_3}{\overset{\oplus}{C}}-CH_3$ (4) $CH_3-\underset{CH_3}{\overset{CH_3}{C}}-\overset{\oplus}{C}H-C_6H_5$

42. Which of the following is most stable alkene :-

(1) $H_2C=CH_2$

(2) $CH_3-CH=CH_2$

(3) $H_5C_2-CH=CH_2$

(4) $(CH_3)_2CH-CH=CH_2$

Tautomerism

43. Tautomerism is due to :-

(1) Delocalization of sigma electrons

(2) Delocalization of pi electrons

(3) Migration of active–H–atom

(4) None is correct

44. Which of the following will lead to maximum enolisation :–

(1) $CH_3-\underset{\|}{C}(=O)-CH_3$

(2) $CH_3-\underset{\|}{C}(=O)-CH_2-\underset{\|}{C}(=O)-H$

(3) $CH_3-\underset{\|}{C}(=O)-\underset{Br}{CH}-\underset{\|}{C}(=O)-CH_3$

(4) All have equal

45. Urea $\left[H_2N-\underset{\|}{C}(=O)-NH_2\right]$ molecule exhibits which type of isomerism:-

(1) Chain (2) Position

(3) Geometrical (4) Tautomerism

46. Tautomerism is not observed in :–

(1) $CH_3-\underset{\|}{C}(=O)-CH_3$ (2) Ph–CH=CH–OH

(3) CH_3-NO_2 (4) $CH_3-\underset{CH_3}{\overset{CH_3}{C}}-CHO$

EXERCISE-I (Conceptual Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	**2**	**3**	**2**	**3**	**3**	**1**	**1**	**2**	**4**	**3**	**3**	**1**	**2**	**3**	**3**
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	**4**	**3**	**4**	**3**	**1**	**4**	**4**	**3**	**2**	**1**	**3**	**4**	**2**	**1**	**1**
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	**3**	**4**	**4**	**4**	**3**	**3**	**4**	**2**	**2**	**4**	**2**	**2**	**3**	**3**	**4**
Question	46														
Answer	**4**														

TG: @Chalnaayaaar

Exercise - II (Previous Year Questions) AIPMT/NEET

AIPMT 2006

1. Which of the following is more basic than aniline

(1) Diphenyl amine (2) Triphenyl amine

(3) p-nitro aniline (4) Benzyl amine

AIPMT 2007

2. Which of the following presents the correct order of the acidity in the given compounds :

(1) $FCH_2COOH > CH_3COOH > BrCH_2COOH > ClCH_2COOH$

(2) $BrCH_2COOH > ClCH_2COOH > FCH_2COOH > CH_3COOH$

(3) $FCH_2COOH > ClCH_2COOH > BrCH_2COOH > CH_3COOH$

(4) $CH_3COOH > BrCH_2COOH > ClCH_2COOH > FCH_2COOH$

AIPMT 2008

3. The stability of carbanions in the following:-

(a) $RC\equiv\overset{\ominus}{C}$ (b)

(c) $R_2C=\overset{\ominus}{C}H$ (d) $R_3C-\overset{\ominus}{C}H_2$

is in the order of:-

(1) (d) > (b) > (c) > (a)

(2) (a) > (c) > (b) > (d)

(3) (a) > (b) > (c) > (d)

(4) (b) > (c) > (d) > (a)

4. Basic strength of:-

(a) $H_3C-\overset{\ominus}{C}H_2$

(b) $H_2C=\overset{\ominus}{C}H$ and

(c) $HC\equiv\overset{\ominus}{C}$

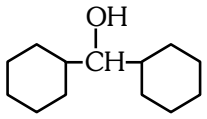
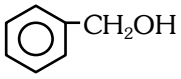
is in the order of:-

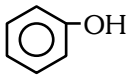
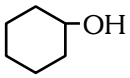
(1) (a) > (c)> (b) (2) (a) > (b) > (c)

(3) (b)> (a) > (c) (4) (c) > (b) > (a)

AIPMT 2010

5. Which one of the following compounds has the most acidic nature ?

(1)  (2) 

(3)  (4) 

6. Given are cyclohexanol (I), acetic acid (II), 2, 4, 6–trinitrophenol (III) and phenol (IV). In these the order of decreasing acidic character will be :-

(1) III > IV > II > I (2) III > II > IV > I

(3) II > III > I > IV (4) II > III > IV > I

AIPMT Mains-2010

7. Among the following four compounds :-

(a) Phenol (b) Methyl phenol

(c) Metanitrophenol (d) Paranitrophenol,

The acidity order is :

(1) c > d > a > b (2) c > d > c > b

(3) b > a > c > d (4) d > c > a > b

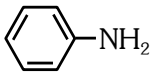
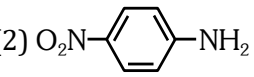
8. Which of the following species is not electrophilic in nature :-

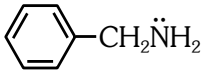
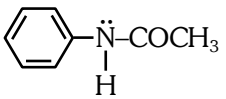
(1) BH_3 (2) $\overset{\oplus}{H_3O}$

(3) $\overset{\oplus}{NO_2}$ (4) $\overset{\oplus}{Cl}$

AIPMT Mains-2011

9. Which of the following compounds is most basic ?

(1)  (2) 

(3)  (4) 

AIPMT Pre.-2012

10. The correct order of decreasing acid strength of trichloroacetic acid (A), trifluoroacetic acid (B), acetic acid (C) and formic acid (D) is:

(1) A > B > C > D (2) A > C > B > D

(3) B > A > D > C (4) B > D > C > A

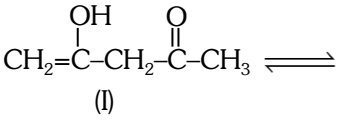
TG: @Chalnaayaaar

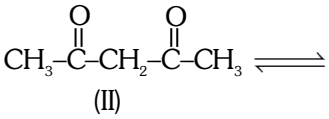
NEET-UG 2013

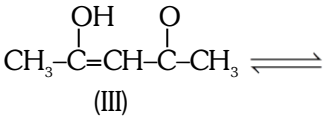
11. The radical, is aromatic because it has:-

(1) 6p–orbitals and 7 unpaired electrons
(2) 6p–orbitals and 6 unpaired electrons
(3) 7p–orbitals and 6 unpaired electrons
(4) 7p–orbitals and 7 unpaired electrons

12. The order of stability of the following tautomeric compounds is :-


(I)

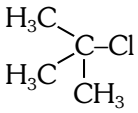
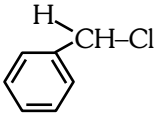

(II)

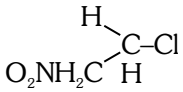
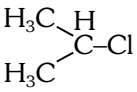

(III)

(1) II > III > I (2) I > II > III
(3) III > II > I (4) II > I > III

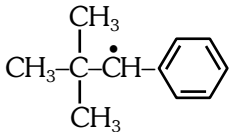
AIPMT 2015

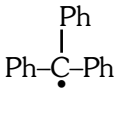
13. In which of the following compounds, C–Cl bond ionisation shall give most stable carbonium ion?

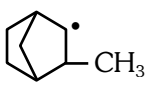
(1)  (2) 

(3)  (4) 

14. Consider the following compounds


(I)


(II)

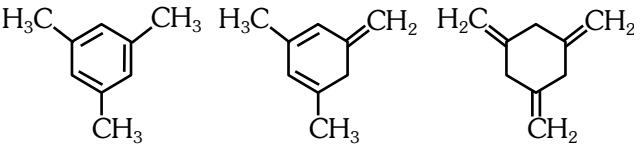

(III)

Hyperconjugation occurs In :-

(1) II only (2) III only
(3) I and III (4) I only

TG: @Chalnaayaaar

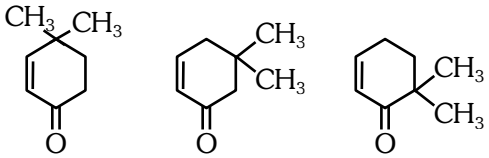
15. Given :-


(I) (II) (III)

The enthalpy of the hydrogenation of these compounds will be in the order as :-

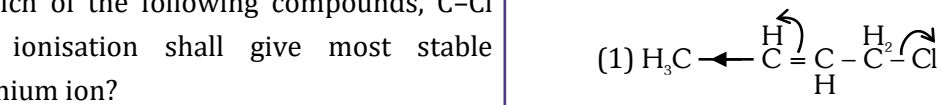
(1) III > II > I (2) II > III > I
(3) II > I > III (4) I > II > III

16. Which of the given compounds can exhibit tautomerism ?


(I) (II) (III)

(1) I and III (2) II and III
(3) I, II and III (4) I and II

17. Which of the following is the most **correct** electron displacement for a nucleophilic reaction to take place?

(1) 

(2)

(3)

(4)

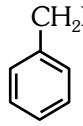
Re-AIPMT 2015

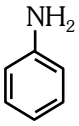
18. Which of the following statements is not correct for a nucleophile ?

(1) Nucleophiles attack low e^- density sites
(2) Nucleophiles are not electron seeking
(3) Nucleophile is a Lewis acid
(4) Ammonia is a nucleophile

TG: @Chalnaayaadar

19. Correct order of K_b is

(i) 

(ii) 

(iii) $CH_3CH_2-NH_2$

(iv) $H_3C-\underset{\underset{O}{\|}}{C}-NH_2$

(1) iv > iii > ii > i (2) iii > i > ii > iv

(3) i > ii > iii > iv (4) ii > iii > iv > i

NEET-I 2016

20. The correct statement regarding a carbonyl compound with a hydrogen atom on its alpha carbon, is :-

(1) A carbonyl compound with a hydrogen atom on its alpha-carbon never equilibrates with its corresponding enol.

(2) A carbonyl compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known as aldehyde-ketone equilibration.

(3) A carbonyl compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known as carbonylation.

(4) A carbonyl compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known as keto-enol tautomerism.

21. The **correct** statement regarding the basicity of arylamines is :-

(1) Arylamines are generally less basic than alkylamines because the nitrogen lone-pair electrons are delocalized by interaction with the aromatic ring π electron system.

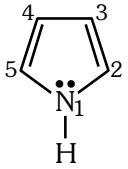
(2) Arylamines are generally more basic than alkylamines because the nitrogen lone-pair electrons are not delocalized by interaction with the aromatic ring π electron system.

(3) Arylamines are generally more basic than alkylamines because of aryl group.

(4) Arylamines are generally more basic than alkylamines, because the nitrongen atom in arylamines is sp-hybridized.

NEET-II 2016

22. In pyrrole

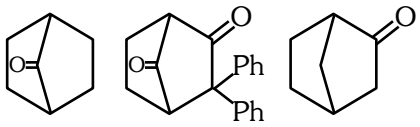


The electron density is maximum on :-

(1) 2 and 4 (2) 2 and 5

(3) 2 and 3 (4) 3 and 4

23. Which among the given molecules can exhibit tautomerism ?

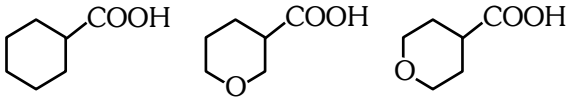


I II III

(1) Both I and II (2) Both II and III

(3) III only (4) Both I and III

24. The **correct** order of strengths of the carboxylic acids



I II III

is

(1) III > II > I (2) II > I > III

(3) I > II > III (4) II > III > I

NEET(UG) 2017

25. Which one is the correct order of acidity ?

(1) $CH \equiv CH > CH_3 - C \equiv CH > CH_2 = CH_2 > CH_3 - CH_3$

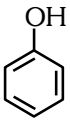
(2) $CH \equiv CH > CH_2 = CH_2 > CH_3 - C \equiv CH > CH_3 - CH_3$

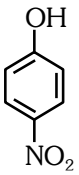
(3) $CH_3 - CH_3 > CH_2 = CH_2 > CH_3 - C \equiv CH > CH \equiv CH$

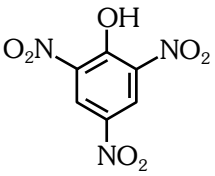
(4) $CH_2 = CH_2 > CH_3 - CH = CH_2 > CH_3 - C \equiv CH > CH \equiv CH$

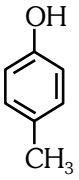
TG: @Chalnaayaadar

26. Which one is the most acidic compound ?

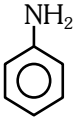
(1) 

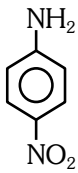
(2) 

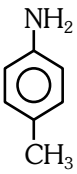
(3) 

(4) 

27. The **correct** increasing order of basic strength for the following compounds is :

(I) 

(II) 

(III) 

(1) III < I < II

(2) III < II < I

(3) II < I < III

(4) II < III < I

28. The **correct** statement regarding electrophile is:-

(1) Electrophile is a negatively charged species and can form a bond by accepting a pair of electrons from another electrophile

(2) Electrophiles are generally neutral species and can form a bond by accepting a pair of electrons from a nucleophile

(3) Electrophile can be either neutral or positively charged species and can form a bond by accepting a pair of electrons from a nucleophile

(4) Electrophile is a negatively charged species and can form a bond by accepting a pair of electrons from a nucleophile

NEET(UG) 2018

29. Which of the following is correct with respect to –I effect of the substituents ? (R = alkyl)

(1) $-NH_2 < -OR < -F$

(2) $-NR_2 < -OR < -F$

(3) $-NH_2 > -OR > -F$

(4) $-NR_2 > -OR > -F$

NEET(UG) 2019

30. The **correct** order of the basic strength of methyl substituted amines in aqueous solution is :-

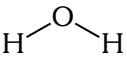
(1) $(CH_3)_2NH > CH_3NH_2 > (CH_3)_3N$

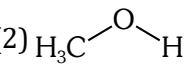
(2) $(CH_3)_3N > CH_3NH_2 > (CH_3)_2NH$

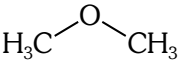
(3) $(CH_3)_3N > (CH_3)_2NH > CH_3NH_2$

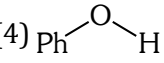
(4) $CH_3NH_2 > (CH_3)_2NH > (CH_3)_3N$

31. The compound that is most difficult to protonate is:-

(1) 

(2) 

(3) 

(4) 

NEET(UG) 2019 (ODISHA)

32. The most stable carbocation, among the following is :-

(1) $(CH_3)_3C-\overset{\oplus}{C}H-CH_3$

(2) $CH_3-CH_2-\overset{\oplus}{C}H-CH_2-CH_3$

(3) $CH_3-\overset{\oplus}{C}H-CH_2-CH_2-CH_3$

(4) $CH_3-CH_2-\overset{\oplus}{C}H_2$

NEET(UG) 2020

33. A tertiary butyl carbocation is more stable than a secondary butyl carbocation because of which of the following ?

(1) Hyperconjugation

(2) –I effect of $-CH_3$ groups

(3) +R effect of $-CH_3$ groups

(4) –R effect of $-CH_3$ groups

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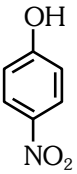
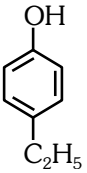
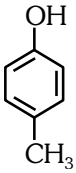
34. Which of the following substituted phenols is the strongest acid?

(1) 

(2)

(3) 

(4) 

EXERCISE-II (Previous Year Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	**4**	**3**	**3**	**2**	**3**	**2**	**4**	**2**	**3**	**3**	**2**	**3**	**2**	**2**	**1**
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	**3**	**2**	**3**	**2**	**4**	**1**	**2**	**3**	**4**	**1**	**3**	**3**	**3**	**1**	**1**
Question	31	32	33	34											
Answer	**4**	**3**	**1**	**1**											

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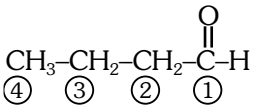
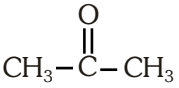
Exercise – III (Analytical Questions) Master Your Understanding

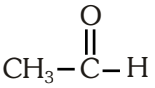
1. Which hydrogen in the following hydrogen is most acidic :-

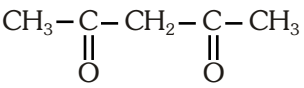


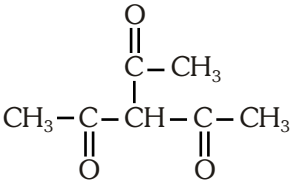
(1) C_1–H (2) C_2–H
(3) C_3–H (4) C_4–H

2. Which of the following has the most acidic proton:

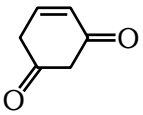
(1) 

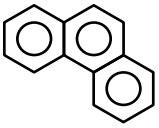
(2) 

(3) 

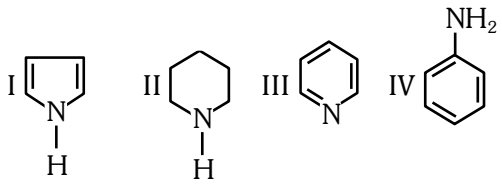
(4) 

3. Which is not aromatic compound :-

(1) (2) 

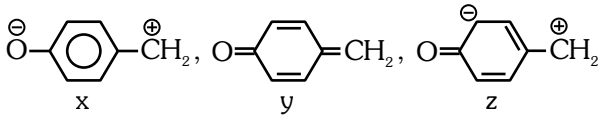
(3) (4) 

4. The correct order of decreasing basic strength is



(1) I > II > III > IV (2) II > III > I > IV
(3) II > IV > I > III (4) II > III > IV > I

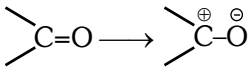
5. Select the correct option for stability of following resonance structures :-



(1) x > y > z (2) z > y > x
(3) y > x > z (4) y > z > x

6. (a) CH_2=CH—CH=CH_2
(b) CH_3—CH=CH_2
(c) CH_3—CH_3
C—C single bond distance would be :-
(1) a < b < c (2) a > b < c
(3) a < b > c (4) a < b > c

7. Which is wrong electromeric effect :

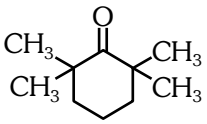
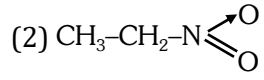
(1) 

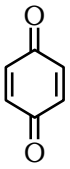
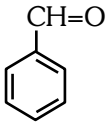
(2) CH_3–CH=CH_2 ⟶ $CH_3-\overset{\oplus}{C}H-\overset{\ominus}{C}H_2$

(3) CCl_3–CH=O ⟶ $CCl_3-\overset{\ominus}{C}H=\overset{\oplus}{O}$

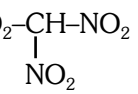
(4) CH≡CH ⟶ $\overset{\oplus}{C}H=\overset{\ominus}{C}H$

8. Tautomerism is exhibited by :-

(1)  (2) 

(3)  (4) 

9. Identify the compound that exhibits tautomerism :-
(1) 2-Pentanone (2) Formaldehyde
(3) 2-Butene (4) Lactic acid

10. Arrange the following in correct order of acidic strength :
(I) CH_3—NO_2 (II) NO_2—CH_2—NO_2
(III) CH_3—CH_2—NO_2 (IV) 

(1) IV > II > I > III (2) IV > II > III > I
(3) III > I > II > IV (4) III > I > IV > II

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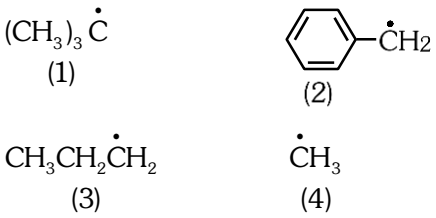
11. The correct order of stability of following carbon free radical is :-



(1) 1 > 2 > 3 > 4 (2) 4 > 3 > 2 > 1

(3) 2 > 3 > 1 > 4 (4) 2 > 1 > 3 > 4

12. Given below are two statements:

Statement-I : Polarisation of σ bond caused by polarisation of alternate σ bond is reffered to as inductive effect.

Statement-II : Inductive effect decreases rapidly as the number of intervening bonds increases and vanishingly small after three bonds.

In the light of the above statements, choose the most appropriate answer from the options given below:

(1) Both statement I and statement II are incorrect.

(2) Statement I is correct but statement II is incorrect.

(3) Statement I is incorrect but statement II is correct.

(4) Both statements I and statements II are correct.

13. Given below are two statements:

Statement-I : Alkyl group directly attached to the negatively charged carbon destabilise it due to inductive and hyperconjugation effect.

Statement-II : The observed order of carbocation stability is :

$\overset{\oplus}{C}H_3 < H_3C\overset{\oplus}{C}H_2 < (CH_3)_2\overset{\oplus}{C}H < (CH_3)_3\overset{\oplus}{C}$

In the light of the above statements, choose the most appropriate answer from the options given below:

(1) Both statement I and statement II are incorrect.

(2) Statement I is correct but statement II is incorrect.

(3) Statement I is incorrect but statement II is correct.

(4) Both statements I and statements II are correct.

14. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason(R)** .

Assertion : Hybridisation influence the bond length and bond enthalpy (strength) in organic compounds.

Reason : The change in hybridisation affect the electronegativity of that atom. This relative electronegativity is reflected in several physical and chemical properties.

In the light of the above statements, choose the most appropriate answer from the options given below:

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A).

(2) Both (A) and (R) are correct but (R) is not the correct explanation of (A).

(3) (A) is correct but (R) is not correct.

(4) (A) is not correct but (R) is correct.

15. Consider following molecule/ions as nucleophile or electrophile and select incorrect statement.

(A) BF_3

(B) $H_3C-\overset{\oplus}{C}=O$

(C) $(CH_3)_3N$

(D) CO_2

(1) A, B and D are electrophile

(2) B is electrophile while A, C and D are nucleophile.

(3) A and B are electrophile while C is nucleophile.

(4) Only C is nucleophile.

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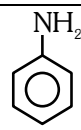
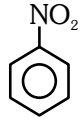
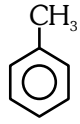
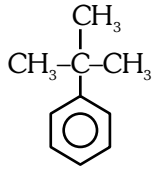
16. Match the column :-

Column-I (Organic compound)		**Column-II** (Effect of substituent)	
(a)		(p)	+I and +H
(b)		(q)	–M and –I
(c)		(r)	+M and –I
(d)		(s)	+I only

(1) a = p, b = q, c = r, d = s
(2) a = r, b = q, c = s, d = p
(3) a = r, b = q, c = p, d = s
(4) a = p, b = r, c = s, d = q

17. Match the column :-

Column-I (Functional group)		**Column-II** (Effect)	
(a)	–OR	(p)	+M and –I
(b)		(q)	+M and +I
(c)	$-CH_3$	(r)	+I and +H
(d)		(s)	–M and –I

(1) a = q, b = s, c = r, d = p
(2) a = p, b = r, c = s, d = q
(3) a = p, b = s, c = r, d = q
(4) a = q, b = s, c = p, d = r

EXERCISE-III (Analytical Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	**2**	**4**	**2**	**4**	**3**	**1**	**3**	**2**	**1**	**1**	**4**	**2**	**3**	**1**	**2**
Question	16	17													
Answer	**3**	**3**													

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